

CLAIMS

1. An information generating device comprising at least display means and character or symbol input means, which is used in an information generating system for generating a receive unit file for transmission or communication to represent information created using a hyperlink, wherein display positions of plural pieces of information in the same file are brought into one-to-one correspondence with numeric keys, and into correspondence with one another through hyperlinks, and the correspondences do not accompany calling of another file.
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2. An information generating device comprising at least display means and character or symbol input means, which is used in an information generating system for generating a receive unit file for transmission or communication to represent information created using a hyperlink, wherein information is created for bringing display positions of plural pieces of ordered information into one-to-one correspondence with numeric keys in ascending numeric order.
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3. The information generating device according to claim 2, wherein pieces of the receive unit file in the same file are brought into correspondence with one another through hyperlinks not accompanied by calling of another file.
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4. An information generating device comprising at least display means and character or symbol input means, which is used in an information generating system for generating a receive unit file for transmission or communication to represent information created using a hyperlink, wherein plural pieces of ordered information are divided into files according to the file size or number of numeric keys, the divided plural files are brought into one another through hyperlinks, and display positions of the plural pieces of information with sequence numbers in each file are brought into one-to-one correspondence with the numeric keys in ascending numeric order through hyperlinks.

5. An information generating device comprising at least
15 display means and character or symbol input means, which is used
in an information generating system for generating a receive unit
file for transmission or communication to represent information
created using a hyperlink, wherein display positions of plural
pieces of information in the same file, each piece being capable of
20 fitting in one-screen display space of said display means, are
brought into one-to-one correspondence with numeric keys, and
into correspondence with one another through hyperlinks not
accompanied by calling of another file.

25 6. An information generating device comprising at least

display means and character or symbol input means, which is used in an information generating system for generating a receive unit file for transmission or communication to represent information created using a hyperlink, wherein display positions of plural pieces of ordered information in the same file are brought into one-to-one correspondence with numeric keys through hyperlinks not accompanied by calling of another file, each piece of ordered information being capable of fitting in one-screen display space of said display means.

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7. A route guidance information generating device comprising: display means; map storage means storing a road network; input means for entering plural points; search means for taking in from said input means information obtained from said map storage means to calculate a route between plural points; route guidance element generating means for generating route guidance elements for route guidance on the basis of the route result calculated by said search means; and route guidance information generating means for generating route guidance information on the basis of the route guidance elements generated by said route guidance element generating means, wherein said route guidance information generating means generates route guidance information at plural guide points on the route between plural points as plural pieces of ordered information or information capable of fitting in one-screen display space of said display

means.

8. The route guidance information generating device according to claim 7, wherein the route guidance information contains at least distance on each road to the next guide point.

9. The route guidance information generating means according to claim 7, wherein the route guidance information contains at least intersection names.

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10. The route guidance information generating device according to claim 7, wherein the plural guide points include named intersections located at the nearest side of corresponding nameless intersections along the traveling direction as well as
15 locations at which geographical orientations change to a considerable extent before and after intersections, Y branches and locations at which road types change.

11. The route guidance information generating device
according to claim 7, wherein the route guidance information
contains at least display information images, which represent with
arrows traveling directions at intersections of roads.

12. The route guidance information generating device
25 according to claim 7, wherein the route guidance information

contains at least display information images, which represent with arrows directions indicative of crossing conditions at intersections of roads and traveling directions at the intersections of roads.

5 13. The route guidance information generating device according to claim 7, wherein the route guidance information contains at least display information images, which represent with arrows directions indicative of crossing conditions at intersections of roads, widths of the roads and traveling directions at the
10 intersections of the roads.

14. The route guidance information generating device according to claim 7, wherein the route guidance information contains at least display information images which represent with arrows traveling directions at intersections of roads, and distance on each road to the next guide point, the distance being located at the tip of each arrow of the display information images that represent with the arrows the traveling directions.
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20 15. The route guidance information generating device according to claim 7, wherein the route guidance information contains at least display information images which represent break lines between the guide points.

25 16. The route guidance information generating device

according to claim 7, wherein the route guidance information contains at least any of character, image or voice information, or a combination of these pieces of information.

5 17. The route guidance information generating device according to claim 7, wherein display positions of intersection names at the guide points in the route guidance information, composed of a plurality of names of intersections to pass through on the route between plural points, are brought into one-to-one
10 correspondence with numeric key in ascending numeric order through hyperlinks.

15 18. The route guidance information generating device according to claim 17, wherein a route guidance simplified map represented by images, the map schematically synthesizing driving directions of the intersections at the plural guide points in one file, brought into one-to-one correspondence with the numeric keys, corresponding numerals are put in positions corresponding to the guide points on the route guidance simplified map, and the display positions are brought into one-to-one correspondence with the numeric keys in ascending numeric order, and into correspondence with one another thorough hyperlinks.
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25 19. The route guidance information generating device according to claim 7, wherein the positions at which corresponding

numerals are represented on the route guidance simplified map are standardized on either the right or left side of the traveling directions.

5 20. The route guidance information generating device according to claim 7, wherein information is created for representing the route guidance information in plural levels of hierarchy and associating the plural levels of the guidance information with one another through a hyperlink on a guide point
10 basis.

21. The route guidance information generating device according to claim 20, wherein the route guidance information represented in the plural levels of hierarchy is divided into files
15 dependently on the division of the next-higher level of hierarchy.

22. A route guidance information providing center device comprising: map storage means for storing a road network; search means for searching information obtained from said map storage
20 means to calculate a route; route guidance information generating means for generating route guidance information for route guidance on the basis of the route calculated by said search means; reception means for receiving input from said route guidance information generating means and input from the
25 outside; and transmission means for transmission to the outside,

wherein the input from the outside is received and the route guidance information generated is sent out to the outside.

23. The route guidance information providing center device
5 according to claim 22, wherein map information is called from said map storage means to send out map information corresponding to the route guidance information together with the route guidance information.

10 24. A navigation device including at least input means for entering plural points and present position calculating means for calculating a present position, the navigation device comprising communication means for receiving route guidance information and map information sent out from a route guidance providing
15 center device, which includes map storage means for sending out plural pieces of point information from said input means and storing a road network, search means for calculating a route on the basis of information obtained from said map storage means, route guidance information generating means for generating route
20 guidance information for route guidance on the basis of the route calculated by said search means, reception means for receiving the route guidance information and input from the outside, and transmission means for transmission to the outside, such that the input from the outside is received and the route guidance
25 information generated is sent out to the outside, wherein a display

screen is displayed or voice guidance is performed through a hyperlink according to the present position information.

25. A navigation device including at least input means for
5 entering plural points, present position calculating means for
calculating a present position and route guidance information
generating means, the navigation device comprising
communication means for receiving route guidance elements and
map information sent out from a route guidance providing center
10 device, which includes map storage means for sending out plural
pieces of point information from said input means and storing a
road network, search means for calculating a route on the basis of
information obtained from said map storage means, route
guidance element generating means for generating route guidance
15 elements for route guidance on the basis of the route calculated by
said search means, reception means for receiving the route
guidance elements and input from the outside, and transmission
means for transmission to the outside, such that the input from the
outside is received and the route guidance elements generated
20 are sent out to the outside, wherein a display screen is displayed
or voice guidance is performed through a hyperlink according to
the present position information.

26. A navigation device comprising: at least map storage
25 means for storing a road network; input means for entering plural

points; search means for calculating a route between the plural points inputted by said input means; route guidance element generating means for generating route guidance elements for route guidance on the basis of the route result calculated by said
5 search means; route guidance information generating means for generating route guidance information on the basis of the route guidance elements generated by said route guidance element generating means; and present position calculating means for calculating the present position of its own device, wherein a
10 display screen is displayed or voice guidance is performed through a hyperlink according the present position information on the basis of the route guidance information generated.

27. An information generating method comprising: a route
15 searching step of setting a starting place and a destination, inputting through input means information obtained from map storage means, and calculating a route between plural points; a step of generating route guidance elements for route guidance on the basis of the route result calculated in said route searching
20 step; a step of generating route guidance information at plural guide points on the route between the plural points on the basis of the route guidance elements generated; and a step of displaying through display means the route guidance information generated, wherein display positions of plural pieces of route guidance
25 information in the same file are brought into one-to-one

correspondence with numeric keys so that the route guidance information will be serially displayed, and into correspondence with one another through hyperlinks not accompanied by calling of another file.

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28. A storage medium for storing the route guidance information generated by any of said devices according to any one of claims 1 through 26.

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29. A communication-type navigation system for transmitting route guidance information searched at a center to a communication terminal to guide a user to a route, wherein said center divides the route guidance information into plural pieces each of which has a size equal to or less than the reception capacity of said communication terminal to transmit the divided information.

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30. The communication-type navigation system according to claim 29, wherein the route guidance information is represented according to a communication protocol or in an application language suitable for use in a network provided by said communication terminal.

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31. The communication-type navigation system according to claim 30, wherein the application language suitable for use in

the network is compact hypertext markup language.

32. The communication-type navigation system according
to claim 30, wherein the application language suitable for use in
5 the network is hypertext markup language.

33. The communication-type navigation system according
to claim 30, wherein the communication protocol suitable for use
in the network is a wireless application protocol.

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34. The communication-type navigation system according
to claim 29, wherein an initial geographical orientation of said
communication terminal is displayed.

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35. The communication-type navigation system according
to claim 34, wherein the initial geographical orientation is
displayed in relation to the position of a celestial body.

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36. The communication-type navigation system according
to claim 34, wherein the initial geographical orientation is
displayed in relation to the position of a surrounding landmark or
landmarks.

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37. The communication-type navigation system according
to claim 29, wherein main points of the route are inputted.

38. The communication-type navigation system according to claim 37, wherein the starting place is set by inputting the first intersection and the next intersection.

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39. The communication-type navigation system according to claim 37, wherein guidance elements located close to a real destination are listed so that one element will be selected and inputted therefrom.

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40. The communication-type navigation system according to claim 37, wherein input is done by voice.

41. The communication-type navigation system according to claim 37, wherein input is done on an external keyboard connected to said communication terminal.

42. The communication-type navigation system according to claim 29, wherein a turn cost at nameless intersections is weighted.

43. The communication-type navigation system according to claim 29, wherein function select buttons are provided.

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44. The communication-type navigation system according

to claim 43, wherein labels are attached to guide points on a route overview and a button indicated by a corresponding one of the labels is entered to shift the current screen to a guidance detailed screen.

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45. The communication-type navigation system according to claim 43, wherein a re-search button is provided at some midpoint on the route guidance.

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46. The communication-type navigation system according to claim 43, wherein a long-distance route is divided and searched, and a button to search for a continued part is provided at the end of each divided piece.

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47. The communication-type navigation system according to claim 43, wherein a button to determine whether priority is assigned to understandability of the route or reduction of hours of the travel.

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48. The communication-type navigation system according to claim 29, wherein a guidance program which describes the route guidance information is downloadable to said communication terminal.

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49. The communication-type navigation system according

to claim 48, wherein an execution result of the guidance program downloaded is divided and displayed in a display area on said communication terminal.

- 5 50. The communication-type navigation system according
to claim 43, wherein a user is informed of changes in the route
guidance information.

10 51. The communication-type navigation system according
to claim 50, wherein when a change in distance to a turn direction
arrow display or intersection or to the destination occurs, the
distance is displayed.

15 52. The communication-type navigation system according
to claim 50, wherein when the user approaches a guide point, the
volume or tone color of a beep is changed.

20 53. The communication-type navigation system according
to claim 50, wherein when the user approaches a guide point, said
communication terminal turns its backlight on.

25 54. The communication-type navigation system according
to claim 50, wherein when an event has occurred, said center
informs said communication terminal of the event.

55. The communication-type navigation system according to claim 50, wherein when the user deviates from the suggested route, re-search is activated.

5 56. The communication-type navigation system according to claim 50, wherein when the user deviates from the suggested route, information on surrounding roads to pass through is transmitted to said communication terminal together with the suggested route.

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57. The communication-type navigation system according to claim 50, wherein routes including return routes to the original route are pre-calculated and sent to said communication terminal beforehand.

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58. The communication-type navigation system according to claim 29, wherein advertisements are displayed or conducted.

20 59. The communication-type navigation system according to claim 30, wherein information on facilities of commercial sponsors are made viewable on the map so that said center will extract and display or conduct the facility information in the neighborhood of the route.

25 60. The communication-type navigation system according

to claim 59, wherein the commercial sponsors are charged.

61. The communication-type navigation system according
to claim 60, wherein each of the commercial sponsors is charged
5 according to the number of times the advertisement concerned is
displayed or conducted.